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METROPOLITAN SANITARY COMMISSION.

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OBSERVATIONS

ON THE

ASIATIC CHOLERA,

DURING A RESIDENCE IN ST. PETERSBURG IN 1848,

AND ON ITS

PREVENTION AND CURE;

WITH AN ACCOUNT OF THE SANITARY REGULATIONS PROPOSED TO BE ADOPTED AGAINST THE SPREADING OF THE DISEASE IN THIS COUNTRY.

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INTRODUCTION.

THE chief object contemplated in the publication of the following observations has been to urge upon the attention of the public two very important facts. The first of these is, that the invasion of the malignant cholera is almost invariably preceded by premonitory symptoms of derangement in the functions of the digestive organs, the most prominent of which is, relaxation of the bowels. The second is, that if due care be taken to check these premonitory symptoms on their first appearance by the use of proper remedies, the progress of the disease is generally arrested, and the development of its dangerous and unmanageable symptoms prevented.

In order to insure the application of the practical measures founded on these two facts, ESPECIALLY AMONG THE LOWER CLASSES, I have strongly recommended the organization in every parish of small district visiting boards, and that the members of these boards should visit once a day every house in their respective districts for the purpose of securing the due attention of the inhabitants to all the approved measures of prevention. I firmly believe that the general adoption of such a plan would be the means, under Providence, of saving a great many lives, and of lessening considerably the ravages of this dreadful scourge among our population. It is most important that the formation of these district boards should be proceeded with immediately, before the disease has reached this country, which it is rapidly approaching.

I have only given a general and brief statement of the history of the disease, and of some of the methods of treatment adopted in St. Petersburg. A full account of the course of the epidemic in that city, and of the results obtained from different plans of practice, would fill a volume, and is a work that will no doubt be undertaken by some of the resident physicians. I think it only justice to add, that the members of the profession in St. Petersburg deserve the greatest praise for the indefatigable zeal and courage with which, regardless of personal hazard, they devoted themselves to the relief of their perishing fellow-citizens; and also for the ability and judgment they exhibited in the administration of the remedies; although owing to the severity of the disease, and other circumstances, their labours in many cases were not crowned with success.

St. Petersburg is provided with large and well-regulated hospitals. It has a good medical school, and a central sanitary board, with excellent regulations for the preservation of the public health. Its medical professors and practitioners include, also, among their number many individuals of distinguished merit for their talent, learning, and experience.

3, *St. James' Street, Pall Mall,*
August 31, 1848.

PROGRESS OF THE DISEASE IN EUROPE.

The Asiatic cholera reappeared in Europe in the spring of 1847. Advancing from Persia, where it had prevailed for some time, it penetrated into Russia through the Caucasus, and first broke out in the Imperial Army engaged in the Caucasian War, as appears from the reports of

Professor Pirogoff and Dr. Salomon. It then, for the most part, took a northern direction, following the course of the Volga and the Don, and spreading, though not with much intensity, over the contiguous southern provinces of Russia, it reached Moscow about the end of September. The disease did not at first spread widely over the city, being confined chiefly to the lower classes in one particular district near the river, where, however, it assumed a severe character, nearly half of the cases terminating fatally. The progress of the disease north and west was, also, rather slow; for it did not extend much beyond the province of Moscow, and, at the approach of winter, the number of cases in that metropolis became so small, that hopes were entertained for some time that it was altogether subsiding. There occurred, however, during the winter occasional cases, from which there was reason to apprehend that the increase of the malady was only suspended by the cold and dry state of the atmosphere in winter, and that it would again break out in spring. The disease accordingly assumed increased activity about the month of May, extending itself over the whole city and among all classes, though the poor as usual suffered the most, and the number of new cases amounted daily to several hundred. The progress of the disease throughout the country became, also, much more rapid than during the previous year; for it spread almost simultaneously over all the provinces of the empire, north, east, and west, appearing in St. Petersburg in the beginning of June. It has, in the present month of August, reached Finland and Sweden in its northern, and Riga in its western course; whilst in the south-west it has attacked Constantinople and the provinces of Wallachia and Moldavia, following the course of the Danube; it has also visited Asia Minor and Egypt, in its progress to the south. It is therefore probable that it may enter the southern states of Europe by the Mediterranean, while extending west along the shores of the Baltic, and across the frontier of Poland into Germany.

The march of the cholera, however, as of most epidemic diseases, has been characterized both in India and Europe by an irregularity which sets at defiance all attempts to apply to its progress any fixed rule of calculation. The disease broke out formerly in St. Petersburg in June, 1831, and did not reach London till February, 1832. It then spread rapidly, in the course of a few months, over the whole of the west and south of Europe, as far as the Alps. It has on the present occasion taken one twelvemonth to travel from the southern frontier to St. Petersburg, while within the three last months it has invaded the whole of that vast empire, and has with equal rapidity pursued its course along the shores of the Black Sea and the Mediterranean into Egypt. It has been observed, sometimes, to leave a great tract of country in the line of its progress unaffected, and attack unexpectedly some distant place in the same direction; and at others to take a circuitous course back and invade the places that had previously escaped. During its prevalence in St. Petersburg in 1831 it sometimes appeared in every house on one side of a street, while the other side wholly escaped; this might, however, depend on the vicinity of a canal, or some defect in the draining. While, therefore, it is possible the disease may not, as in 1832, reach this country for many months to come, no dependence can be placed upon its capricious course, and it will be wise to make every necessary preparation, as if certain of its immediate invasion.

There is one peculiarity generally, though not always, attending its progress, which deserves special notice, viz., that in its advance from

Asia to Europe, it has usually followed the course of the great rivers and lakes along which the trade of these regions is chiefly carried; and this circumstance seemed to favour the opinion of its being infectious, the infection, as was supposed, being propagated by the bargemen employed in this traffic. On a careful examination of the subject, however, this opinion appears to be altogether groundless.

Many observations prove that a damp state of the atmosphere is one of the circumstances the most favourable to the development of the disease. This is the general condition of the air along rivers and lakes, where the banks are often marshy, and covered with mist. In 1831, when the cholera broke out in the Polish army, while contending with the Russians on the banks of the Vistula, it was observed (as reported to me by Dr. Dalmas, who had been sent to Poland by the French Government to study the disease), that whenever the Polish army occupied low and marshy positions along the river, there was immediately a rapid increase of the cholera among the troops, and that each time they removed to higher ground the disease immediately decreased. It was on the banks of the Thames, and where the drainage is most defective, that the disease was most prevalent and fatal in London in 1832; and it was in low, damp, and badly-drained localities throughout the three kingdoms that its ravages were the greatest.

Another circumstance which favours the extension of the cholera along the rivers in Russia and the East, is, that the diet of the bargemen engaged in the traffic is of a vegetable and indigestible nature, consisting chiefly of large quantities of cabbage, salads, cucumbers, &c., which they often eat in the raw state, and with bad oil: labouring hard on this poor diet in hot weather, they are very subject, at all times, to suffer from diarrhœa and dysentery; it is not, therefore, surprising they should easily fall victims to such a disease as the cholera.

State of the Weather in Russia in 1848.

The last winter in Russia was dry, moderately cold, and the fall of snow much less than is usual; the spring set in very early, the Neva being clear of ice, and the navigation open nearly a month sooner than is generally the case. The weather was fine and dry, and the temperature mild, in March, April, and the beginning of May. There was a great prevalence of severe influenza, complicated with sore throat, in February and March; and in April and May, the number of cases of intermittent fever, and also of diarrhœa and dysentery (complaints generally prevalent at that season), was greater in the hospitals than in ordinary times. During the latter end of May and the whole of June, a remarkable change took place in the weather. There were almost constant high winds, shifting frequently and suddenly round to every point of the compass, and often accompanied with torrents of rain, and sometimes thunder. This disturbed state of the atmosphere was indicated by sudden fallings and risings of the barometer, sometimes to the extent of between 1 and 2 inches. The changes of temperature were equally frequent and rapid, the heat being, for several days together, very great, as high as from 84° to 90° of Fahrenheit, and the air extremely sultry and oppressive, with a damp relaxing south wind; and then suddenly, on a change of wind, and sometimes on the occurrence of a thunder storm, this oppressive heat would be succeeded by great cold, the thermometer falling as much as 50° in a few hours, so that it was several times in June nearly as low as the freezing point.

Another peculiarity in the condition of the air was the disturbed state of its electricity. This was clearly demonstrated by the fact that the electric machines could not be charged, and, to a great extent, lost their power, as generally happens whenever the atmosphere is damp and unsettled. The same remark was made respecting the strength of several large magnets; and it has been reported since I left St. Petersburg that the weather having become more settled, the electric machines and magnets have recovered their power. This disturbed condition of the electricity of the air was also indicated by the peculiarly depressed and uneasy state of feeling which almost everybody complained of more or less; some entirely losing their sleep, whilst others slept more heavily than usual. Few persons, in fact, during that period, escaped suffering from some degree of derangement in their health. This was generally indicated, not only by the depressed and uncomfortable feelings just mentioned, but by loss of appetite, foul tongue, occasional nausea, or vomiting and irregularity of the bowels, which were sometimes confined, but more generally relaxed, a state of health obviously creating a strong predisposition to such a disease as the cholera. It was also remarked that the crows had forsaken some of their usual roosting-places in the public gardens of the city and suburbs, where they are generally found in great numbers, and had flown to the nearest high grounds.

The peculiarities in the condition of the atmosphere just described, as regards its density, moisture, temperature, and electricity, have been observed by several ancient writers, and especially by the celebrated Dr. Sydenham, to precede and accompany usually all great epidemics. It has also been supposed that these peculiarities are connected with epidemics, as their exciting causes, though the precise manner in which they act has hitherto remained unknown. The great similarity between the properties of the electric and the nervous agents, and the great influence exercised by the latter on the changes the blood undergoes in the extreme vessels of the body, and, therefore, upon the important functions of assimilation, secretion, and absorption, are points of physiology which have been more successfully investigated in our times than at any former period; and sufficient has been discovered to justify the belief that the electric state of the atmosphere is capable of exercising a powerful influence on the functions of animal life, either in the preservation of health or the production of disease. The same may be said of vegetable life; for there being reasonable ground for believing that the circulation of the fluids in plants is materially promoted by electric agency, their diseases may also be connected with some peculiarities in its influence. The potato disease has again appeared in Russia, as in most other parts of the Continent.

Topography and Climate of St. Petersburg.

The site of St. Petersburg and of the surrounding country is rather flat, low, and not much raised above the level of the river Neva. The city is, also, intersected by several large canals, in which the water has, generally, very little current, and emits, in hot weather, damp effluvia. The perfect draining of the city is attended, perhaps, with some difficulties, on account of the want, in several of its quarters, of sufficient slope; but much has been done towards the accomplishment of this most important object, which, considering its influence on the public health, is deserving of unremitting attention.

These natural disadvantages of site are, however, very much counteracted by the remarkably good and beautiful construction of St. Petersburg, the streets being wide and airy, and squares spacious; and by the great attention, also, paid to their cleanliness. The city has been occasionally exposed to destructive overflowings of the Neva, and many of the dwellings below the surface of the ground are habitually damp. The poorer people are, also, stated to drink sometimes the impure water of the canals, although this is prohibited, rather than be at the trouble or expense of procuring it from a greater distance. The water of the Neva is itself rather aperient, causing usually diarrhœa in strangers, until they become accustomed to it. For several miles round the city, in some directions, the country is flat, some of it a common, and there frequently arises in the evening during the hot season a thick damp mist, extending over the whole district.

The climate of St. Petersburg, though dry and bracing in winter, is, consequently, rather damp and relaxing in spring and summer, and the lower classes are subject to intermittent and typhus fever, bowel complaints, and scorbutus. The damp and relaxing state of the atmosphere was complained of as being more oppressive this year than usual. On removing to the nearest high grounds one felt immediately relieved from a sensation of great weight and languor, which returned on going back to the city. A regiment of the guards having been brought from the camp on the high grounds to do duty in the city, was soon attacked with cholera; while persons complaining of indisposition, on being sent to the country, quickly recovered by the mere change of air.

It will appear evident, from what has been stated, that St. Petersburg was predisposed by the peculiarities of its topography and climate to suffer much from such a disease as the cholera. This predisposition was still further increased by some of the habits and prejudices of the lower classes of the people. The month of June, when the disease appeared, is the period of one of their long religious fasts of three weeks' duration. The people abstain all this time from the use of animal food of every kind, including milk, eggs, and butter. The diet consists chiefly, besides fish and rye bread, of vegetables and fruits, such as cabbage, cucumbers, and other varieties of the pumpkin tribe, dried mushrooms, salads, &c., which are often eaten raw, and dressed with linseed oil and vinegar; their ordinary drink is an acid kind of beer, made of rye meal and malt fermented, called *quass:* they are greatly addicted, also, to the use of ardent spirits. This diet, besides being very lowering for labouring people, is of a nature to create a tendency to bowel complaints. Although the Archbishop allowed the people to dispense with the fast, and the Emperor ordered meat for the soldiers, such was the strong attachment of the lower classes to their accustomed rites, that they generally continued the observance of the fast, and it was sometimes found difficult to persuade them to take even a little broth, although the saving of their lives seemed to depend on their being sustained by suitable nourishment. The people were also generally afraid and suspicious of the use of medicines, and consequently averse to apply for medical advice, and especially to enter the hospitals, as is generally the case in almost every country.

Sanitary Regulations adopted in St. Petersburg.

Nothing could be more wisely devised and ably executed than the sanitary preparations made for the relief of the people by the Board of

Health,* under the direction of the government. The city was divided into districts, and ample hospital accommodation was provided by appropriating the greater part of the existing hospitals for cholera patients, and erecting, where necessary, large temporary wooden hospitals. In all these, the best arrangements were made for supplying promptly baths and other means of applying heat to the body, and an adequate number of medical men were appointed to attend them. There were also medical inspectors allotted to each district, who were to visit the people in their houses as soon as a case of the disease was reported, and attend on those who would not be removed to the hospital. A list of the names and addresses of the medical inspectors was left at the police station of each district, in order that by inquiry there the people might obtain prompt assistance at any time, night or day. Very good instructions were printed and widely circulated among the inhabitants, containing all the precautions to be observed as regards diet, clothing, &c., and recommending especially that they should carefully attend to the least appearance of diarrhœa or of any other derangement of the digestive organs, as the surest way of warding off the more dangerous forms of the disease. This important precaution was recommended in the following terms:—
"It has been remarked that, just before the appearance of cholera in a district, the inhabitants are troubled more than usually by diarrhœa and other complaints, trifling under ordinary circumstances, but which, in the presence of the epidemic, are apt, if neglected, to degenerate into real cholera cases."

These judicious plans were, however, rendered in some measure abortive by the ignorance and prejudices of the people. Their opposition was, indeed, carried so far that, having taken up the absurd notion that the disease was caused by the poisoning of the provisions and the water, they beat several unfortunate individuals suspected of being poisoners, one of whom died; an extensive plot was also organized for a general rising on a given day to attack the hospitals and the police stations, and this mad plot was only prevented by the courageous and timely interference of the Emperor.†

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* The Central Board of Health consists of a number of medical men and magistrates, and its regulations are comprehensive and judicious. The city is divided into police districts. There are several medical officers attached to each district as the official inspectors of public health. Their duties are to visit in their houses the sick poor who cannot go to the hospitals; to attend to the cleansing and draining of the houses and the streets, and the removal of all nuisances; to report cases of infectious disease, to investigate all cases of medical jurisprudence, and lastly, as a most important means of preserving the health of the lower classes, to inspect, when required, the quality of all articles of food as well as medicine, and prevent their being adulterated. The adulteration of food is a subject to which there is the most urgent need that the attention of the guardians of the public health should be directed in this country. For the adulteration of every article of food, without exception, supplied to the poor, has long been systematically carried on to so frightful an extent, that in the opinion of all medical men in the habit of attending the lower classes, the unwholesome food on which they are thus *compelled* to subsist must inevitably tend to impair most seriously their health and shorten their lives. The adulteration of medicines is equally general, and not less injurious.

† The Emperor, hearing of the intended disturbance, proceeded to the city from his country residence, and drove unattended to the markets and other public places where the people were assembled in large crowds. He is reported to have strongly reproved them for their disorderly conduct, and for their absurdity in attributing the cholera to the poisoning of the food; to have told them they should consider it as a visitation of God for the punishment of their sins, and that, instead of murdering their fellow-men and

My observation of the working of the foregoing sanitary regulations firmly convinced me that, however excellent the plan, some additional measures are indispensable to render it decidedly successful in checking the progress of such a disease as the Asiatic cholera.

Plan of Sanitary Regulations proposed.

The following great principle should be kept constantly in view in the treatment of this formidable complaint, viz.: that its invasion being, almost invariably, preceded by certain premonitory symptoms of derangement of the digestive organs, it is of the highest importance that these symptoms should be checked on their first appearance by immediate recourse to the remedial means required for their relief. This should be done in every case without loss of time, since the delay of even a few hours may be followed by the setting in of the most formidable and intractable symptoms of cholera, as was sometimes witnessed in St. Petersburg; while it almost invariably happened that, when the first premonitory symptoms of diarrhœa and sickness were promptly treated, the individual escaped any further attack of the disease.

The important fact of the invasion of cholera being generally preceded by slight symptoms of gastric derangement, and of the development of the dangerous symptoms of the disease being generally prevented by checking immediately any such derangement, was observed in this country during the epidemic of 1832; and the attention of the profession was called to it more especially by the late Dr. M'Cann, as is related in the second valuable Report of the Metropolitan Sanitary Commission, page 15 *et seq.*

No plan of sanitary regulations can be completely effectual that does not provide the means, as far as practicable, of securing the constant attention of every member of the community to these preventive measures.

General instructions may be attended to by the intelligent and the wealthy, but I feel certain that nothing but DAILY INSPECTION can secure the due attention of the poor and ignorant, even in this country, to the foregoing important rule. Their general carelessness and indifference to all advice respecting diet and medical treatment is the chief cause of the greater prevalence of this disease among them than among the higher classes.

The plan, therefore, I would propose, is the following:—

To divide every parish into a number of small districts, consisting only of a few streets; to form in each district a local district Board, consisting of the clergy of every denomination, the medical men, and some of the most respectable housekeepers of both sexes; to allot to each member of this Board the inspection of one street or of one section of a street, with the understanding that he is to visit every day all the houses of that district in order to ascertain the state of health of the inmates, and to urge attention to the rules of diet and the importance of their applying immediately for medical assistance if required. A dispensary should be opened in each district, or the resident general practitioner authorised to give medicine and advice.

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violating the laws, they should offer up prayers to God in their churches for His forgiveness, and for their deliverance from this fearful scourge; that if they persevered in their disorderly and riotous proceedings they would be acting more like brutes than rational beings; and that he was firmly resolved to punish the guilty and enforce strict obedience to the laws. A regiment of the guards was, in the meantime, kept encamped in the Champ de Mars, within the city, ready to suppress any attempt at riot. Some of the ringleaders in the assaults on the individuals alluded to were also publicly flogged.

Another most important office of the visitors should be to attend to the draining and cleansing of the houses and the streets, and to the adequate supply of water; measures which are indispensable as preservatives from a disease, the malignity of which has been proved by the most unquestionable evidence to be so fearfully aggravated by a damp and impure state of the atmosphere. There is another measure that would be extremely beneficial viz., to provide the poor, living in low, damp, and imperfectly ventilated rooms, with fuel to light fires, as the best means of purifying and renewing the air.

In towns where the population is very large and densely crowded, and in rural districts where the inhabitants are widely scattered, the Boards might procure the assistance of a few paid agents for the more efficient performance of their duties. These district Boards should be in communication with the general Board of Health of the town or country.

The opening of a number of small hospitals in the districts would be preferable to a few large ones; for where patients are in a state of rapid sinking, the exertion and exposure to cold attending their removal to any distance is extremely injurious. Another objection to large hospitals is the injurious effect upon the mind of the congregation of a great number of patients affected with this disease, in the same ward. To behold in the large wards of some of the hospitals in St. Petersburg from thirty to forty unfortunate beings, most of them writhing and moaning under the intense pain of cramps, and the efforts of vomiting, with sunk ghastly countenances of a livid blue—some dead, and others on the point of dying—was a most sickening and appalling sight, well calculated to paralyse with fear the new patients as they arrived.* The success of the treatment depending chiefly on a *prompt and assiduous application of the remedies*, the number of attendants in the hospitals should be at least double that usually required.

Considering the great probability of the epidemic very soon reaching this country, and the extreme importance of our being prepared beforehand for its invasion, it would be very desirable that the organization of District Visiting Boards, wherever resolved upon, should be proceeded with without delay. All the requisite apparatus for supplying promptly warm water, and hot air baths should also be got ready; such as slipper baths, osier cradles, with spirit lamps for hot air-baths, bags of different sizes for applying heat to various regions of the body, by filling them with heated bran, oats, or salt, and likewise stone bottles for hot water. Everything likely to be required should thus be in readiness, since many valuable lives may be lost for want of timely assistance, if we suffer ourselves to be taken by surprise.

The public ought not to be deterred from assisting in the adoption of such a plan, as the one recommended, by the labour it will entail on the members of the Boards; this can only be temporary, since the duration of the epidemic seldom exceeds two months, and would most probably be greatly shortened by this system of daily inspection. I feel the strongest conviction that by the adoption of such a plan, IF WELL CARRIED OUT, a great many lives might be saved; an assertion in which I believe I should be supported by many of the medical practitioners in St. Petersburgh; for it was their frequent cause of regret that the patients seldom came under their care in the hospitals until they were so dangerously ill that their chances of recovery were doubtful. The

* In the *Hôpital Marie*, and others, the wards were smaller.

people were required to report themselves to the police in every case of illness; but, owing to their reluctance to go to the hospitals, they too generally deferred doing so until the disease had fully set in. The lower classes, in fact, in every country, will be more willing to attend to the advice of neighbours visiting them as friends, than to the directions of agents of police.

The plan, therefore, of *daily house inspection by district visitors* seems the only one capable of bringing the people completely under the beneficial operation of all the other sanitary measures proposed to be adopted; while the want of such a plan will render these measures comparatively of less use in arresting the ravages of the disease.

It should be kept in mind, that the disease is one of the most intractable and rapidly destructive hitherto known; and that while its invasion can, in most cases, be warded off, it may be impossible, when once fully developed, to prevent its terminating fatally, even in a very few hours. It is therefore a disease in which all human efforts should be directed towards PREVENTION.

Causes of the Cholera, and Mode of Propagation.

With reference to the much-disputed question, whether the Asiatic cholera is infectious or not, I think, on an impartial consideration of the circumstances by which its irregular, capricious, and rapid progress over large regions of the globe has been attended, that it is difficult to draw any other conclusion than that the disease originates from some latent influence of the atmosphere on the functions of animal life. The peculiarities in the condition of the atmosphere which exert this influence, have hitherto escaped detection; but they are probably of a similar nature to those by which blights are produced in the vegetable kingdom. That it is an epidemic propagated by atmospheric causes, and not by infection, seems now to be very generally admitted. This is the opinion of the members of the medical profession in Russia; so that all attempts to check its progress by quarantine regulations have been given up, more especially since, in 1831, they were found perfectly unavailing. A quarantine of 10 days was recently imposed by Sweden on the appearance of the cholera in St. Petersburg; but the disease has, notwithstanding, broken out in that country, showing how utterly useless are all such measures. One of the circumstances which strongly favoured the opinion that the disease spread by infection, was the fact of its following the course of rivers on which there was much traffic; but I have shown that this circumstance can be satisfactorily accounted for by other causes beside infection. If the disease be ever infectious, this can only happen when a great many patients are crowded together in a close and badly ventilated place, under which contingency it may assume an infectious character, like typhus, with which it has a close affinity. One circumstance which may tend to prevent its being infectious is, that the evacuations from the bowels, and the effluvia from the breath and skin, are free from any offensive smell.

Appearance and Course of the Cholera in St. Petersburg.

The first intimation of the cholera approaching towards St. Petersburg, was the occurrence of some cases on the banks of the Lake Ladoga and of the Neva which issues from it, and on which a large umber of the barges bringing merchandize from the interior for exortation descend to St. Petersburg every spring. The disease reached

St. Petersburg in the beginning of June. One solitary case had occurred about six weeks previous in one of the military hospitals: the man died in 12 hours, and both the symptoms during life and morbid appearances after death were decidedly those of Asiatic cholera. The number of cases in the first week was small, but nearly all died. Among these were two men servants of the Prince of Oldenburg, who were attacked after eating a supper of cucumbers and salad. Both died; one of them in about 15 hours, the other in about four days. The disease increased rapidly the second week, appearing in every quarter of the city, chiefly among the poor, but attacking some also belonging to the better classes, both natives and foreigners. It continued on the increase until the fifth week, when it seemed to have reached its acme, and began to decline, both in the number and severity of the cases; and, according to the public accounts last received, it has continued steadily on the decrease. It is, however, to be remembered, that pursuing a similar course in 1831, the disease again broke out when the weather became intensely hot towards the end of July, and that it did not decidedly subside until the weather grew cooler at the end of August, when its violence as an epidemic ceased. A small number of cases occurred, occasionally, in the course of the winter, and it was not till April, 1832, that the disease completely disappeared. Its malignity has always appeared favoured by great heat. It may be deserving of notice, that on the present occasion, the decrease of the cholera corresponded with the cessation of the fast, which ended the 29th of June; after which the people resumed the use of animal food, and of a diet, in other respects, more nourishing.

There was some difficulty in obtaining accurate returns of the number of cases and of the proportion of deaths. The Government returns could not perhaps be fully depended upon, it being suspected that there were some of the poor taken ill in their own houses, who purposely omitted reporting themselves to the police. On an approximate calculation, however, made by persons who were qualified by their opportunities to form a correct estimate, the highest number of new cases in one day may be computed to have been between 1300 and 1400.

As regards the exact rate of mortality, there must be, also, some uncertainty for similar reasons. In the beginning nearly every case died; a fact partly accounted for by the circumstance that the complaint first seized those who by previous disease, intemperance, old age, or other causes, were the most predisposed, and the least able to resist its destructive power. The proportion of recoveries continued small during the second week; but in the third it was increased to nearly one-half, and was about two-thirds the fourth and fifth weeks; so that the average mortality, by the time the epidemic has subsided, will most probably have been about one-half.

The deaths, up to the beginning of July, had been nearly 8,000. The population of St. Petersburg is reckoned at about 450,000. Supposing the deaths to have amounted altogether to 10,000, the mortality will have been in the proportion of about 1 to 45.* It should be observed, however, that between 40,000 and 50,000 of the labouring classes fled from the city soon after the breaking out of the cholera, and that a considerable number of these also perished; believing they had left the cholera behind them, as they said, and were therefore safe, they

* See Appendix A.

indulged in the use of cucumbers, and other green vegetables, and died of the disease in great numbers on their way home. The disease did not attack many of the English, and very few died; which may be accounted for by their diet being more substantial than that of the natives. Almost all the English are, also, in easy circumstances.

The town of Cronstadt, situated on a small island at the mouth of the river, and whose port is crowded in summer with the mercantile shipping of all nations, suffered very severely. The disease spread rapidly through its dense population, and assumed great malignity. Several foreign captains and sailors were attacked, as well as a few of the English residents, and some died. The Imperial fleet, consisting of about 13 line-of-battle ships and frigates, were sent to sea for greater safety.

Symptoms of the Disease.

The disease assumed two distinct forms or stages, one of which was generally characterized by an increased action of the nervous, and sometimes of the vascular, system, together with great derangement of the digestive organs; the other by a prostration of the nervous and circulating functions, and a greater or less rapid sinking of the vital forces. In a certain proportion of cases the disease passed through both these stages, presenting many varieties, according to the combination and predominance of the symptoms either of excitement or prostration. In others the period of excitement was altogether wanting, and that of prostration characterized the whole course of the disease. The morbid principle which acts as the proximate cause of the disease excited thus, in some cases, an imperfect reaction followed by prostration; whilst in others it seemed so completely to depress and paralyze the powers of life, that the patient sunk without any effort whatever of the constitution at reaction.

It has been already stated that the first attack was almost invariably preceded for one or several days by some slight derangement of the digestive functions. The stage of excitement was usually ushered in by shivering giddiness, and great faintness; face dusky and sunken, nausea, painful cramps in the stomach, bowels, and extremities; some vomiting and purging; heat in the epigastrium and oppression of the chest. This state was succeeded by some degree of reaction, with increased and severe vomiting, and very copious evacuations, from the stomach and bowels, of a thin fluid resembling rice water; these evacuations were completely wanting both in biliary and fecal matter, as well as free from any offensive smell. The paroxysms of spasm in the extremities and bowels became generally very severe, were attended with great restlessness and faintness, and the countenance was expressive of intense anguish. The pulse was frequent, hard and small; the heat of the skin sometimes febrile, but more frequently not above the natural standard, or only partially increased; the tongue furred, generally moist and red, and the thirst intense. These symptoms, which were usually observed in persons of robust constitutions, after lasting from about six to twenty-four hours, were succeeded by the period of prostration or cold stage.

In the stage of prostration there was a great and rapid sinking of the general strength, and depression of all the functions of organic life; those of the brain alone being only partially impaired, and the intellect remaining clear, though weakened. Thus the whole surface of the body became as cold as marble, and covered sometimes with a clammy mois-

ture; the pulse extremely feeble and often imperceptible, the face sunk and the features contracted to, sometimes, nearly half their natural size; the eyes sunk deep in their sockets, and surrounded by a dark circle, and the pupils generally dilated. The cheeks, hands, feet, and nails, assumed a leaden blue or purplish colour, and likewise, though in a less degree, the entire surface of the skin, whose functions seemed completely paralyzed. One remarkable phenomenon was the sudden collapse of the soft parts of the body, the effect necessarily of all the vessels being nearly emptied of their fluids, and of the rapid absorption of the adipose substance; so that patients were reduced, sometimes in twenty-four hours, perhaps one-third or more of their previous size. The skin of the hands and feet was shrivelled up; the violence of the cramps usually diminished, though not always, and they were limited chiefly to the hands and feet, which often remained contracted after death. The vomiting and diarrhœa were also less urgent; the tongue was moist, flabby, and cold; the respiration hurried, or else slow, and much oppressed with frequent deep sighing; the breath cold, the voice plaintive and reduced almost to a whisper. There was great heat, oppression, and anguish in the epigastrium and about the heart, to which regions all the suffering was referred; considerable restlessness, thirst intense, urine so very scanty as to be nearly suppressed. Patients in this state of sinking expired sometimes suddenly without a struggle, and almost while in the act of speaking; preserving possession of their mind to the last; and it is, also, a remarkable circumstance that the pulse had sometimes ceased to beat many hours before death.

The duration and severity of these two stages of the disease varied greatly according to the age, strength, and previous state of health of individuals. In the largest proportion of cases, and especially in the old, in those whose constitutions were impaired by bad food or previous disease, in habitual drunkards, and delicate children, the symptoms of excitement were only slight, and often altogether wanting.

The disease in a few cases set in suddenly, with great prostration, terminating in death without any reaction, in the course of six or eight hours. This was its most malignant and appalling form, well designated by the French, *Cholera foudroyant*. There was sometimes very little vomiting and diarrhœa in such cases, the prominent features being prostration and cramp.

There were numerous cases of persons being suddenly attacked with bilious vomiting, and diarrhœa, believed to be the invasion of cholera, but who soon recovered by the use of suitable remedies; these mitigated cases were called *Cholerine*, and were indications of the general predisposition to the prevailing form of disease which usually accompanies all epidemics. It was likewise remarked that there was a great decrease in the frequency of all other forms of disease, and that they were often modified in their character by assuming some of the symptoms of the prevailing epidemic.

When reaction took place, either spontaneously or by the use of remedies, this did not always terminate in restoration to health; but the cholera was often succeeded by various forms of *secondary* disease; the most frequent of these was typhus fever, between the congestive stage of which, and some of the morbid appearances of cholera, there is considerable analogy.

Gastric fever and dysentery were, also, not of unusual occurrence, and there were some cases of sub-acute pneumonia.

Morbid Appearances after Death.

The morbid alterations were those usually observed, with the exception of appearances of various degrees of inflammation in the alimentary canal being rather more frequent than had hitherto been noticed. The lungs, heart, liver, digestive organs, and brain, were found more or less congested with blood. The blood was very considerably changed, being black, mostly deprived of its serum, of an oily or ropy consistence, and resembling tar or treacle. No red blood was found in the heart or arteries. Dr. Pirogoff, Clinical Professor at St. Petersburg, who had paid much attention to the pathology of the disease, gave me the following summary of the results of his examination of above 200 bodies up to the beginning of July. In about eight-tenths of these, besides a congested state of the viscera, he found in various portions of the alimentary canal alterations in the mucuous membrane, indicative of every degree of increased vascular action, from the slightest irritation to the most acute and confirmed state of dysentery. In a small number of cases the membranes were unusually pale and thin, as if all the blood had been pressed out of them; but in all there was uniformly observed a morbid condition of the mucuous glands of *Brunner* and *Peyer*, which were enlarged and sometimes ulcerated.

Dr. Pirogoff, who is one of the most distinguished pathologists and surgeons in Europe, has kept an account of the examination of every case, with its history; he has had drawings made of the morbid appearances, and intended to procure an analysis of the blood and other fluids of the body. This work when completed will, therefore, afford a valuable history of the pathology of the disease.

It would be extremely desirable to obtain a correct analysis of the blood and other animal fluids in this disease; and it is to be hoped that the attention of some of our able chemists will be directed to this important subject, when the opportunity occurs.

Treatment.

The question is frequently asked, is there any remedy for the Asiatic cholera? It will, I think, be obvious to any one who reads a correct description of this disease, that it is visionary to expect that a disease characterized by several stages, in which the symptoms are often of the most opposite nature, and assume such a variety of forms, could possibly be relieved by any one specific remedy. The cholera must, in fact, be treated, according to the character of its symptoms, on the same rational principles as every other disease. I must, however, repeat that the most effectual protection from this frightful scourge will be found in the careful use of all the preventive means, and paying special attention to the occurrence of the premonitory symptoms which, almost invariably, precede its attack. I shall therefore first refer to the preventive treatment.

Preventive Treatment.—This includes diet, clothing, and medicine.

It is desirable to support the strength by a nourishing plain diet, carefully, however, avoiding all excesses in eating and drinking. All vegetables and fruits tending to relax the bowels should be carefully avoided, as well as every indigestible article of food. Among these will therefore be included every variety of cabbage, cucumbers, salads, melons, and in general all fruits, unless baked or stewed; also pastry and rich sauces; greasy cooking is also very objectionable. Salmon,

lobsters, crabs, &c., should be avoided, and, indeed, no fish should be eaten except of the white kind and fresh. The diet should in fact consist of plain well-dressed meat, avoiding pork, veal, and salt meat; of rice well boiled, potatoes in moderate quantity, turnips, sea-cale, carrots, and French beans. The only sweet dishes should be jellies, custards, blancmange, and puddings of rice, arrow root, and sago. The bread should be always stale. A moderate allowance of good port or sherry may be taken. The French and German wines were entirely given up by the Russians, who drank nothing but port wine, which at other times they do not use. Old claret, however, free from acid, may be allowed, as likewise sound bitter beer. The use of ardent spirits should be strictly abstained from. Gin drinkers were among the first the disease attacked, and it assumed in them such malignity that scarcely any recovered. Light ginger tea, made by infusing sliced ginger in boiling water, was taken by many at their meals, instead of water. The golden rule, however, will be moderation both in eating and drinking. Some of the severest cases have followed a full meal taken after a long fast.

The clothing should be moderately warm, taking care, especially, to keep the feet dry, and it is advisable to wear in the day a flannel bandage round the body. Sudden changes of temperature from heat to cold should be carefully guarded against; they were very frequent in St. Petersburg, and many were seized with the cholera from this cause. Labourers should be particularly careful not to take any cold drink when in a perspiration, and not to lie down on the bare ground. Regular walking exercise must be taken daily in the open air, this being indispensable to preserve the digestive functions in a healthy condition; which is the main object to be kept in view, as affording the best security against the attacks of this formidable disease. For the same reason it is advisable to give up all night-work and revelry, and retire early to bed. The mind should, as far as possible, be kept free from excitement, anxiety, and groundless apprehensions of danger. The depressing effects of fear upon the nervous system greatly predispose the body to the noxious influences of the atmosphere; and fear, as is well known, in an especial manner disturbs the functions of the bowels.

With regard to medicine, it is important to attend to the regularity of the bowels, being very careful, however, not to irritate them with strong aperients. It was remarked in St. Petersburg, during the prevalence of the cholera, that in those whose bowels were habitually confined they became spontaneously free, while those whose bowels were usually free experienced a tendency to relaxation.

When symptoms of simple diarrhœa occur, *although unattended with pain or sickness*, the complaint must be immediately checked by having recourse to some of the following means.

A mixture should be ordered, consisting of six ounces and a half of chalk mixture, half an ounce of tincture of catechu, a drachm and a half of aromatic confection, and fifty drops of Battley's sedative liquor.* Two table spoonsful of this mixture to be taken every four or six hours until the diarrhœa has ceased. When the diarrhœa is urgent, the mixture must be taken at first at shorter intervals of one hour or less, and then its frequency lessened. The dose to be one table spoonful for delicate women, and children above the age of ten years, and half a table spoonful for children under that age. Twenty grains of opiate confection may

* Laudanum may be substituted for Battley's sedative in dispensary practice.

also be given in place of the chalk mixture, and, being portable, will be found more convenient for persons moving about. Another remedy successfully used against the diarrhœa, when attended with much griping pain, is from half an ounce to one ounce of castor oil, with from ten to twenty drops of laudanum, in six drachms of peppermint water. Small doses of the dilute nitric acid in a mucilaginous mixture were prescribed by some in St. Petersburg, adding occasionally to each dose a few drops of laudanum. One or two tea-spoonsful of tincture of rhubarb, and from eight to sixteen drops of laudanum was also sometimes given, as likewise the extracts of catechu and of logwood.

When, as happened in some cases, there is an accumulation of bile or indigested food, indicated by a loaded bitter tongue, nausea, fulness, and uneasiness in the region of the stomach, this accumulation must first be removed by giving at night two or three grains of calomel, and the following morning from fifteen to twenty-five grains of rhubarb in an ounce of cinnamon water, or else from half an ounce to six drachms of castor oil in peppermint water. When there is much irritation and pain, it will be advisable to combine the calomel with three or four grains of Dover's powder. Those requiring more active medicine may take one ounce, or an ounce and half of infusion of senna, adding four drops of laudanum, and half an ounce of peppermint water. But it must be remembered that much caution is required in the use of aperient medicine, the bowels being more irritable in such seasons than at others. Milder aperients and in smaller doses will be found sufficient; they should not, however, be given unless clearly indicated. An emetic of either one table-spoonful of mustard, or two table-spoonsful of common salt dissolved in half a pint of warm water, and taken gradually until vomiting is excited, may be beneficial when the stomach is much loaded. If after the bowels are cleared out, they continue too relaxed, immediate recourse must be had to the astringent medicines already prescribed. A light diet must be observed of plain dressed poultry or mutton, boiled rice, and other farinaceous articles of food. Weak brandy and water to be taken for drink at the meals, and rice water at other times. When the diarrhœa has been brought on by cold, a warm bath should be taken at bed-time, and a dessert spoonful of spirits of mindererus in a cup of warm gruel, in addition to the dose of chalk mixture. The complaint was rarely of an inflammatory nature, requiring bleeding.

I have dwelt on these details of the preventive treatment from a strong conviction that much more real advantage is to be obtained from careful attention to them, than can be hoped from any treatment of the disease, when once fully established. Several persons fell victims to the cholera in St. Petersburg, in consequence of having transgressed these rules. An elderly lady, having eaten salad at supper, was taken ill next morning, and died of the cholera in eighteen hours. General Chambeau, private secretary to the Empress, a gentleman advanced in life, having caught a chill by incautious exposure to a cold wind on board a steamer, was seized with diarrhœa and symptoms of sinking the same evening, and died in about eighteen hours. A lady of high station setting at defiance the cautions against fruit, indulged freely her wish for strawberries; she was suddenly taken very ill of the cholera, and her life was in the greatest danger, though hopes were entertained of her recovery when I left St. Petersburg. I frequently heard of persons being attacked, and losing their lives after committing some imprudence in diet. It is important to remember that many things which agree with a person in ordinary times,

may disagree during the prevalence of such a disease as the cholera, in consequence of the increased susceptibility of the bowels. The disease was brought on in others by fear; the son of a respectable bookseller returned from college to his family in good health for the vacation in June; he became so panic-struck on the breaking out of the cholera, that he could not be prevailed on to go out of the house, and objected even to the windows being opened, for fear of letting in the contaminated air. After some time he was suddenly seized with the disease in its most malignant form, and died in about twelve hours.

I heard of several similar cases, showing the great importance of endeavouring to preserve a calm and cheerful frame of mind, undisturbed by anxious and gloomy forebodings. To point out the true sources of such confidence, is a task that belongs to the province of the divine, rather than of the physician. I feel, however, bound to add that nothing can impart such strength to the mind, as the comfort which flows from a firm reliance on the hopes of Christianity; and that the composure which is grounded on a humble dependence on the providence of God, and in the belief of the truths of Revelation, was found by many in St. Petersburg, the safest, surest, and most satisfactory antidote to that state of panic which seems to predispose the system to the admission of the disease.

Curative Treatment.—The indications may be reduced to the following:—

First Stage, or that of Excitement.

1st. To sustain moderate reaction. 2nd. To relieve painful symptoms. 3rd. To restore the biliary secretions, and restrain the excessive evacuations which tend to induce prostration.

Second. Cold Stage, or that of Prostration.

1st. To excite a healthy reaction by stimulating the sinking vital energies. 2nd. To prevent the establishment of secondary disease from excessive reaction.

1*st Stage.*—The first thing to be done on the occurrence of cold, giddiness, nausea, and cramps, is to place the patient in a warm bed, apply warmth by means of bottles and heated bags to the feet, along the spine and over the bowels, and to rub also, diligently, the extremities and the region of the stomach. A warm bath, or hot-air bath, should be got ready, to be used if required for sustaining reaction and relieving the spasms. If a good general perspiration can be obtained, this will greatly favour the recovery. Vomiting should not be immediately checked, but the strainings mitigated by warm drinks; weak mint tea, or a table-spoonful of peppermint water in a cup of warm water were found the most useful. When there is much nausea with a sense of fulness in the stomach, it is advisable to promote vomiting by giving a solution of two table-spoonsful of common salt in half a pint of warm water. A large poultice of mustard and vinegar should be applied over the region of the stomach, and kept on 15 or 20 minutes; this generally afforded much relief; but when it fails to take effect, if a plaster of cantharides be applied over the part a blister will be quickly raised.

If the vomiting and cramps are severe, from three to five grains of calomel may be given with some stimulating antispasmodics. The following combination was used with advantage; ℞ tincturæ valerianiæ compositæ ℥i, ætheris sulphurici ʒvi, olei menthæ piperitæ ʒii; one

tea-spoonful for a dose, in a wine glass of warm water, or mint tea; this may be repeated in about an hour, and if the irritability of stomach, cramps and diarrhœa continue severe, from 12 to 25 drops of laudanum may be added to it. These remedies may then be continued, giving the antispasmodics and laudanum alternately every second hour for three or four times. The calomel may also be repeated every three or four hours, or more frequently, according to the urgency of the symptoms. The opium was sometimes given with benefit in enemata, instead of by the mouth; from 30 to 60 drops in three or four ounces of thin starch.

In cases of great irritability and spasm of the stomach, pills consisting of one grain of opium, and three of camphor, are sometimes more easily retained than any liquid medicine. It may be found of advantage in such cases to give a larger dose of opium at first, such as two or three grains, and then to continue it in smaller doses, at intervals of one, two, or three hours, according to the effect produced. The irritability of stomach is often quieted, also, by small quantities of brandy, a dessert-spoonful at a time, in a tablespoonful of water. It is desirable the intense thirst should be freely satisfied, in order to supply the place of the large losses the blood has sustained of its fluid part. The patient should abstain, however, from large draughts, taking fluids only by a few tablespoonsful at a time; seltzer or soda water, and pure spring water, may be allowed, as also saline draughts. Drinks acidulated with the oxymuriatic acid were given in the hospitals.

The administration of the medicines and drinks should be continued, notwithstanding their being frequently rejected by the stomach. If a dose of medicine be thrown up, another must be given in the course of a quarter or half an hour. By persevering in this manner, medicine, drink, and food will, probably, be retained in sufficient quantities to be of service.

Calomel was very generally used, being administered by various practitioners in three different ways: some gave it in small doses frequently repeated, such as one grain every hour or half hour; others adopted the East India plan of from 10 to 20 grains at longer intervals; and others took the middle course of three or four grains every three or four hours. All who used it appeared favourably impressed with its good effects; but the last method is that from which, as far as I could ascertain, the best results seemed to have been obtained. The calomel was considered to act in restoring the biliary secretions, while it assisted in allaying the violence of the spasms. After the vomiting and diarrhœa have been subdued, it is desirable to associate with the calomel some mild aperient, such as 20 grains of rhubarb or half an ounce of castor oil, as a means of preventing, by the promotion of healthy evacuations, hepatic congestion, or gastric fever.

Great relief almost always followed the excitement of strong counter-irritation over the abdomen. Besides sinapisms and stimulating liniments, this was also produced sometimes by boiling water. Being called to see a person in the country affected with cholera, and doubting whether the directions I gave would be efficiently executed, I sent for some boiling water, and had it extensively applied by means of cloths over the region of the stomach, until strong rubifaction of the skin was created. The immediate effect was the complete cessation of the vomiting, which had been very severe for above 24 hours; the stomach retained the remedies administered, which is a most essential point to be gained; and the patient recovered from the cholera, continuing ill for

some time after of fever. Another mode of quickly exciting irritation sometimes resorted to, was igniting cotton dipped in spirits of wine, and moving it quickly over the surface of the skin; the *suddenness* of the pain in both cases seemed to assist in checking the symptoms.

Bleeding, general and local, was seldom resorted to in the beginning, except in plethoric and robust subjects, and in the case of much visceral congestion; under which circumstances it was attended with good effects. But after the urgent symptoms of the disease were removed, there often remained in the præcordial region a feeling of oppression and weight, for the relief of which leeches or cupping were found very effectual. Local abstraction of blood from the nape of the neck was also beneficial when there were symptoms of congestion in the head. By the timely use of these means attacks of consecutive disease may often be avoided.

Opium was in general sparingly used in St. Petersburg, and perhaps with too much reserve; for given in moderate doses at sufficient intervals, so as to support and not depress the forces, it is a powerful agent in allaying violent spasms, restoring the healthy secretions, and in restraining the enormous serous evacuations which create such great and sudden prostration. It has been shown, however, by past experience, that unless its use be confined within moderate limits, it may be followed by evil consequences in causing severe cerebral congestion and consecutive brain fever. I remember seeing several well-marked instances of this unfavourable result during the epidemic of cholera in London in the year 1832.

2nd Stage.—With respect to the treatment of the cold stage, the diligent application of warmth and the internal and external use of stimulants are the only means hitherto found efficient in promoting the desired reaction; although they very often fail. In addition to the warm bath or hot-air bath, and the local application of heat along the spine and other regions of the body, already recommended, frictions over the whole surface of the body must be ASSIDUOUSLY PERSEVERED IN AT SHORT INTERVALS, with such stimulants as warm brandy in which pepper has been steeped, or a liniment composed of camphorated spirits —spirits of turpentine and oil. This is to be applied especially with a hot flannel over the abdomen, and inside the thighs. The Russians are very partial to stimulating oils, and make a great use of turpentine. The frictions should be suspended when the heat of the body has been restored, and carefully resumed as soon as it begins to decrease, so as to *sustain* the reaction. When the stomach is very irritable a strong sinapism must be applied over it.

The internal stimulants used consisted of combinations of Valerian æther, ammonia, and some of the essential oils, such as the formula given, page 18. These were sometimes administered alternately with wine or brandy; thus a tea-spoonful of the valerian and æther mixture may be given in a small glass of warm mint tea every alternate hour, and two table-spoonsful of brandy in double the quantity of hot water the intervening hours; or else a glass of port wine or sherry. It being desirable that some light nourishment should be combined with the stimulants, the wine and brandy may be administered with arrow-root, sago, or good beef tea. The stimulants may be given at shorter intervals when the sinking is rapid. A wine glass of pure brandy taken on the first appearance of prostration brought about reaction in several cases; this practice is stated to have been adopted with some success

in India, adding to the brandy about the third of a tea-spoonful of Cayenne pepper. Opium was seldom administered in this stage, in consequence of its depressing power. The patient can never be considered safe until the secretion of urine and of bile are restored. It is important to keep patients in this state in the recumbent position, as the slightest muscular exertion might be sufficient to bring on a fatal collapse.

The doses of the stimulants and the frequency of their administration, must be regulated chiefly by their effects and the urgency of the symptoms. Careful management is always required to bring about reaction, and conduct it to a successful issue. The indiscriminate use of stimulants in large doses has not unfrequently had the effect, by exciting an excessive reaction, of creating a new and severe disease; or else the feeble powers of life being over excited, a fatal collapse has followed. The gradual development of reaction must, therefore, be carefully watched, and the stimulants lessened in proportion as the vital strength is restored. Reaction must thus be gradually brought on and sustained, but not *forced*; harm was sometimes done in 1831 by the abuse of stimulants from inattention to this rule. Some attempts were made in St. Petersburg this year to force on reaction by means of very hot baths, but they failed.

The most diligent and careful use of all these means has, however, it must be confessed, proved wholly unavailing in a large number of cases, producing, apparently, no more effect than if applied to a dead body. But it will be well to remember that there is something mysterious in the process of reanimation from a state of sinking, which prevents our knowing with certainty to the very last, in any case, that reaction may not take place. Cases have occurred in the present, as well as in the former, epidemic of cholera in which, after life seemed completely extinct, a spontaneous reaction has imperceptibly taken place, and bodies even removed to the dead-house have been found restored to life. There is in this respect some analogy between the cholera and asphyxia from drowning: the former is, in fact, a state of asphyxia caused by the introduction into the blood of a virulent poison; the means of resuscitation should, therefore, be *long and assiduously* persevered in, as on this will mainly depend the hope of recovery.

A variety of other remedies were used, besides those mentioned, such as the infusion of arnica and camphor; the infusion of valerian; the sulphate of quinine: the dilute nitric acid was given in an infusion of althæa, with favourable results, to restrain the diarrhœa, adding sometimes a few drops of laudanum to each dose. The oxymuriatic acid was also in much use. Naphtha was found of service in the south of Russia as a stimulant and antispasmodic.

Small and repeated doses of tartar emetic were sometimes given in cases in which the tongue was very thickly furred, and the remedy was persevered in, without regard to the vomiting or purging, until the tongue became clean and moist: it was considered to act beneficially in restoring the suspended biliary secretions, allaying the spasms and promoting a reaction to the skin. I saw one case which appeared to be recovering under its use. Strong emetics have been recommended, in the cold stage, as a means of rousing up reaction; but the results yet obtained from their trial do not justify much confidence being placed in the practice.

The saline treatment, with small and repeated doses of common salt

combined with carbonate of soda, was tried, but with such partial success only as not to entitle it to be considered preferable to other modes of treatment. Frictions with ice were used by some as a means of quickly obtaining reaction: the plan pursued was to rub diligently the different regions of the body with ice, then to pack the patient up in a sheet wrung out of salt-water, and cover him with a great number of blankets, a solution of culinary salt in water being given at short intervals. This plan was reported to have been adopted with good success among some of the troops, who were, mostly, healthy men with robust constitutions. I knew the case of a strong young woman in which it was beneficial, but I heard of its failure in others; and its advantages in the cold stage of the disease, in which the powers of reaction are feeble, appear problematical. It might be preferable and safer to begin the frictions with water at about 80°, and to reduce by degrees its temperature. (Appendix B.)

Common salt was used in St. Petersburgh in 1831 as an emetic, in doses of two table-spoonsful in about half a pint of hot water, which was repeated if necessary; the salt was then continued in smaller doses about every hour. The results of this treatment were highly commended by the two practitioners who employed it, as checking generally the progress of the disease by promoting bilious vomiting.* A similar plan was reported by Dr. Pidduck to have been pursued by him, with very great success, in London in 1832; it may, therefore, be well deserving of a trial on a large scale.

The subnitrate of bismuth, given in does of three grains every second or third hour, was found of service in St. Petersburgh in 1831 in allaying severe spasms and checking the copious serous evacuations.

The inhalation of a mixture of air and oxygen gas has been proposed in the cold stage as a powerful stimulant, acting directly upon the blood and the heart: it is a means that deserves to be fairly tried, as likewise galvanic shocks along the spine and through the chest. The actual cautery was freely applied along the spine, in cases of extreme prostration, by Dr. Lange, of Cronstadt, in 1831; and in 12 out of 14 aggravated cases, the patients are reported to have recovered.† The injection of chloroform into the rectum was tried by Professor Pirogoff in the Caucasus; but the success of the experiment did not seem to warrant its adoption in St. Petersburgh. There might be reason to apprehend its depressing influence in a disease of prostration. (Appendix C.)

The question is frequently asked, what should be done by a person seized with any of the symptoms of cholera when medical advice cannot be immediately procured, since the loss of a few hours in the use of the necessary remedies may be of importance? The following means may always, under such circumstances, be employed with safety:—If feelings of cramp and pain in the bowels or stomach occur, a teaspoonful of the valerian and æther mixture, prescribed page 18, should be taken in half a cup of hot water, with the addition of a little sugar. If there be nausea and a sense of fulness in the stomach, an emetic of common salt may be taken, as directed page 17. If the patient feels cold and faint, and has cramps in the extremities, he should get into a warm bed, and frictions be diligently used and warmth applied over the stomach and to the extremities. If the pain and cramp continue, 25 grains of the opiate confection and 5 grains of calomel may be taken, with some

* Official reports of Dr. Barry and Dr. Russell, p. 108. † Ibid. p. 115.

warm brandy and water of moderate strength, and a large mustard poultice should be applied over the region of the stomach. Light mint-tea to be drank warm in case the sickness be severe. The æther mixture may be repeated in two hours, and also the opiate confection if necessary; but medical advice should in all cases be obtained as soon as possible.

APPENDIX.

(A.) Page 12.

The following account of the rate of mortality throughout the empire has just been received:—"For twelve weeks about 70,000 died weekly of the cholera in Russia; and now (September) in some of the provinces the mortality is still very great. One of the last reports stated that in the province of Harkoff 11,000 died in one week. It is reckoned that above 800,000 of the inhabitants of the empire have already fallen victims to this fatal disease." Computing the whole population at 56 millions, the rate of mortality will have been, hitherto, one in seventy, which is by no means so great as the mortality which has often attended epidemics of typhus fever and influenza in this and other countries.

The foregoing account also states that no specific against the disease has been discovered, but that, "if taken in the first stages, before either spasms or coldness of the extremities had appeared, the usual remedies to stop the vomiting and diarrhœa were generally found successful in restoring the patients." This confirms the great importance of immediate attention being paid to the earliest symptoms of the disease.

(B.) Page 22.

It appears by a later report, that the plan of frictions with ice, packing up in a sheet wrung out of salt water, and drinking salt water, has failed to bring on reaction in the stage of prostration; and that it has caused such excessive reaction in the robust, that the physicians have been obliged to bleed. This report also states that many who had recovered from the cholera, have been affected subsequently with obstinate and unremitting headache, resisting generally every plan of treatment, and which in some cases, has worn the patients down to the grave by a kind of martyrdom.

(C.) Page 22.

The subjoined statement of the successful treatment of some cases of cholera with chloroform taken by the mouth in the liquid state, may be deserving of the attention of the profession. It is a well established fact that persons recover from the full influences of the inhalation of chloroform without suffering from any of the secondary injurious effects which attend the use of large doses of opium, such as head-ache, disorder of the stomach, and confinement of the bowels. It would appear that chloroform calms nervous irritation without causing so much cerebral congestion as opium If, administered in the manner prescribed by Mr. Brady, it be found on further trial to be as successful as he states, it may become a valuable substitute for opium in the treatment of cholera, as well as of many other diseases. It will only require to be used with some caution, on account of its strong direct depressing power.

Cholera.—Chloroform.

To the Editor of the Record.

Sir,

Two such remarkable cases of the almost instantaneous cure of Indian cholera have taken place in my parish that I feel it right to employ the medium of your paper to make them known to the public. I give the medical account both of the attack and of the remedy in one of these cases. The merit of the discovery and the application of the remedy is due to a Mr. Brady, a medical practitioner in this place. I may add, that two other medical men, in other places, have been led to use the same means, and they have done so with the same success.

The report of Mr. Brady is as follows:—"On my arrival I found the patient presenting all the symptoms of malignant Asiatic cholera, in an advanced stage; the features collapsed and ghastly; extremities and tongue cold; burning sensation in the stomach and œsophagus; pulse rapid and scarcely perceptible; voice diminished to a whisper; stomach exceedingly irritable, and the dejections from the bowels presenting the characteristic rice-water appearance; the sight gone, and all the voluntary muscles affected by spasm, so that the patient writhed with agony. I immediately administered a large teaspoonful of the *chloroform* mixture (containing about six minims of chloroform and forty of turpentine, in a glass of dilute brandy; and applied mustard poultices to the calves of the legs, the abdominal and thoriac muscles. Thirst was relieved by drinking plenty of water, nearly cold. Notwithstanding the irritable state of the stomach, I had the satisfaction to find that the chloroform draught was retained, as well as the fluid drunk after it, and was followed by no dejection. I now (half an hour after the draught) gave a pill with a few grains of calomel. In another hour I again administered the same dose of chloroform, and soon after repeated the pill. The stomach retained both; the pulse rose in power and became slower; the spasms less frequent; and in an hour after the second dose, she was bathed in a profuse perspiration, and expressed herself comparatively free from *all* uneasy sensations. The attack was completely subdued, leaving behind it a good deal of debility, from which she is rapidly recovering."

It is remarkable that the chloroform thus taken internally does not affect the brain, and appears not to be followed, like brandy and other stimulants, by the smallest prostration of strength.

The second case to which I have referred varies in no one leading particular from this, and these are the only two which have occurred in the village.

I send this statement in the hopes that those who have larger opportunity will put this remedy to a more extensive test. My own convictions are so strong of its efficiency that I should not hesitate to apply it if the necessity arose.

I am, your obedient, &c.

Sept. 19, 1848. C——

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